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(54) PRODUCTION OF NONORIENTED SILICON STEEL SHEET EXCELLENT IN SURFACE PROPERTY AND MAGNETIC PROPERTY

(57)Abstract:

PURPOSE: To produce a nonoriented silicon steel sheet excellent in surface properties, brittleness, magnetic flux density and core loss by subjecting an extra low carbon-high Si hot rolled steel sheet having a specified compsn. contg. Sn, Cu, Ni, Cr, C and Nb to specified hot rolled sheet annealing, cooling treatment, cold rolling and recrystallization annealing.

CONSTITUTION: A hot rolled steel sheet having a compsn. contg., by weight, <0.005% C, 2.0 to 4.0% Si, 0.05 to 2% Al, 0.05 to 1.5% Mn, $\leq 0.1\%$ P, $\leq 0.003\%$ S, <0.004% N, 0.003 to 0.2% Sn, 0.015 to 0.2% Cu, 0.01 to 0.2% Ni, 0.02 to 0.2% Cr, 0.0005 to 0.008% V, <0.001% Nb, and the balance inevitable components is subjected to hot rolled sheet annealing to regulate the grain size to $\geq 50\mu\text{m}$ and is gradually cooled at $\leq 80^\circ\text{C/sec}$. This hot rolled steel sheet is subjected to cold rolling at $\geq 88\%$ rolling ratio. After that, this cold rolled sheet is subjected to recrystallization annealing at 800 to 1200° C. Thus, the nonoriented silicon steel sheet of a high grade can be obtd., and the way of largely consuming inexpensive iron scraps is developed.